International Library Association. Here, again, our space forbids us to catalogue his almost inexhaustible list of honours, but we must mention that he was a Commander of the Legion of Honour, and he held the Order Pour le Mérite. He was elected a Fellow of the Royal Society in 1858.

Lord Avebury married firstly Ellen, only child of the Rev. Peter Hordern, and secondly Alice Augusta Laurentia, daughter of the late General A. A. L. Fox-Pitt-Rivers, a granddaughter of the second Baron Stanley of Alderley. He is succeeded by his eldest son, the Hon. J. B. Lubbock, who is a partner in the banking firm of Robarts, Lubbock and Co.

PROF. J. T. NICOLSON.

THE early death of Dr. J. T. Nicolson, professor of mechanical engineering in the Manchester School of Technology and in the University of Manchester, will be much regretted by a wide circle of friends. His health during the past six months had given serious cause for anxiety, but had improved sufficiently to allow him to return to his duties. There followed a sudden relapse, and he died at Macclesfield on May 27 after a brief illness.

Prof. Nicolson was born at Amble, in Northumberland, in 1860, and received his early education at Watson's College, Edinburgh. He was then apprenticed to Hawthorne Leslie and Co., Newcastle-on-Tyne. From there he gained a Whitworth scholarship and entered Edinburgh University, where he graduated in 1889, obtaining the D.Sc. degree some years later. After graduation he spent two years in Charlottenburg, where he investigated the strength of materials under Prof. Martens. After holding the position of assistant-lecturer in engineering in the University of Cambridge, he was appointed in 1892 professor of mechanical engineering in McGill University, Montreal. He took an active part in the equipment of the engineering department and in arranging the courses of instruction for students. During his stay in Montreal he undertook an investigation with Prof. Callendar on the valve-leakage of steam on the surface of cylinders. This important investigation led to the award of the Telford premium to the authors. Prof. Nicolson resigned his professorship in Montreal in 1899 in order to take charge of the engineering department of the School of Technology, Manchester, and was largely responsible for the whole engineering equipment of that institution—an equipment which in variety and extent is even now unsurpassed in this country. When degree courses were instituted in the School of Technology in connection with the University of Manchester he was appointed the first professor of mechanical engineering, a position which he held until his death.

Prof. Nicolson's tenure of the chair at Manchester was marked by several important and extensive investigations. He made detailed experiments on rapid-cutting steels, in which he showed the relations between the cut and speed and the durability. The results of these investigations were published as a report by the Manchester Association of Engineers in 1903, and were well received by the engineering profession. As was characteristic of Prof. Nicolson, he immediately applied the experimental results to the improvement of the design of machine tools.

During the last few years of his life he took up the question of the transfer of heat to boilers. The late Prof. Osborne Reynolds had predicted in 1874 on theoretical grounds that the rate of transfer of heat from a gas or fluid to a solid surface should increase with the velocity of movement. This was confirmed for fluids by the experiments of Dr. Stanton in 1897. Prof. Nicolson, in an elaborate series of experiments, showed that the same result held for gases. He then applied this idea to the design of boilers and condensers, the essential point being that the heated gases were driven at a high speed through the tubes of the boiler, the water circulating in the opposite direction. As a result of an extended trial of a 60-h.p. boiler over sixty days, it was found that the efficiency of such a combination was considerably greater than that of the ordinary boiler. There has been much difference of opinion among engineers as to the practicability of this idea, but Prof. Nicolson himself had the strongest belief in the greater overall efficiency to be obtained by his methods.

The training of Prof. Nicolson fitted him admirably to fill the position of a professor of engineering, for he had not only a wide scientific outlook, but took a keen interest in the practical side of his profession. This is shown by the promptness with which he applied the results of his scientific investigations to the improvement of engineering practice. He was a man with strong opinions on engineering questions, and vigorously supported his position when attacked. His personal integrity, straightforward character, and sympathy with their scientific difficulties endeared him to his colleagues, while his vigorous personality and ability as a teacher made a strong and lasting impression on all his students. Owing to his increasing deafness he was unable in recent years to take that active part in administrative matters for which his wide outlook well fitted him. His premature death is a great loss to science, and will be much regretted by his colleagues both in Manchester and Montreal.

NOTES.

THE home list of honours conferred on the occasion of H.M. the King's birthday on June 3 includes three new Privy Councillors, seven new baronets, and twenty-six knights. The only fellow of the Royal Society in the list is Prof. E. A. Schäfer, professor of physiology in the University of Edinburgh, who has received the honour of knighthood. The same honour has been conferred upon Prof. J. H. Biles, professor of naval architecture in the University of Glasgow. Prof. T. H. Middleton, formerly professor of agriculture in the University of Cambridge, and now assistant secretary, Board of Agriculture and Fisheries, has been appointed a Companion of the Order of the Bath (C.B.). The appointments to the Order of the Indian Empire (C.I.E.) include Major G. K. Walker, professor of sanitary science, Punjab Veterinary College; Mr. L. Mercer, president of the Forest Research Institute and College, Dehra Dun; and Mr. J. H. Lace, Chief Conservator of Forests, Burma.

IN opening, on Tuesday, June 3, the new buildings of the medical school at Guy's Hospital, Mr. A. J. Balfour delivered an address in which he pleaded for the endowment of research. In the course of his remarks he said:—Some people unacquainted with the movement of modern science may ask why it is that in 1913 apparatus, buildings, and expenditure of all kinds are required infinitely in excess of what was necessary even fifty years ago. The necessity arises not merely through the growth of the great urban population, but through the inherent progress of science itself. Fifty years ago some branches of science, such as physics, biology, and even some modern parts of chemistry, although studied by those who intended to devote their lives to medicine, had nevertheless an incomparably smaller connection with medicine than exists at the present time. As the connection of other collateral sciences with the science and practice of medicine has become closer, so the apparatus required has greatly increased in cost, so the amount of knowledge required from the teachers and the specialisation of the teachers have grown, until we may sometimes wonder how it is possible for any physician in a great practice even to keep himself abreast of what is being done in his own country and by researchers in all the other countries who are now engaged in happy rivalry for the furtherance of knowledge.

BESIDES the man of practical intuition and besides the man who can teach, Mr. Balfour added in the address referred to above, we want, if a medical school is to be all that it might be, a man who can investigate, a man who possesses that kind of originality which enables him to point out in what direction the next advance should be made, where progress may be expected, where nature may, under existing conditions, be most easily compelled to yield up her secrets. This man is the researcher. Genius is rare in any country and in any profession. All that organisation can do is to give to those rarely endowed individuals some opportunity by which they can exercise effectively for the common advantage the gifts which God has given them. If a man is going to devote to research hours which might profitably be given to the general practice of his profession, he must have a position of security in which he can feel that he is not sacrificing the interest of those nearest and dearest to him in the pursuit and advancement of new knowledge. The public must assist the great hospitals by a form of endowment which will enable them when they obtain a man with a genius for research to keep him and to use him. There are men who have quite a unique talent for research, who probably would not be very great clinical physicians. Places must be found for such men. This is absolutely necessary if there is to be a true organisation of medical research. The actual sufferings of the moment touch all hearts, but my appeal now is for the future, in favour of having academic lines of research of which the public knows nothing and yet on which depends the real future of the healing art.

THE bicentenary of the Imperial Botanic Garden at St. Petersburg, which was founded in 1713 by Peter the Great, will be celebrated this month.

LORD GLENCONNER has presented 1000*l*. to the Edinburgh Royal Infirmary for the purchase of radium to be used in the work of the institution.

THE twenty-fourth conference of the Museums Association is to be held in Hull from July 14 to 18, when Mr. E. Howarth will occupy the chair.

PROF. C. S. SHERRINGTON, F.R.S., has been appointed an additional member of the Departmental Committee on the lighting of factories and workshops.

NEWS has reached us from Mexico of the death, on April 23, at forty-seven years of age, of Prof. L. G. León, general secretary of the Mexico Astronomical Society. His death is deeply regretted by the members of the society, who appreciate highly his activity and work for astronomical science.

ON June 11 the Right Hon. the Lord Mayor of London will officially open the Anglo-German Exhibition at the Crystal Palace. The exhibition includes a section on industry, with subsections relating to chemistry, surgical and optical instruments, electricity, and agriculture and forestry, among others.

AN excursion to Minehead and district, West Somerset, has been arranged by the Geologists' Association for June 20–24. The directors are Mr. L. Richardson and the president, Dr. J. W. Evans. On the Saturday, June 21, there will be an opportunity to study the classic sections of Upper Keuper, Rhætic, and Lower Lias in the neighbourhood of Watchet.

ANNOUNCEMENT is made that Mr. Arthur James has decided, as a memorial to his late brother, Mr. William James, to give the income of a sum of 20,000*l*. for cancer research to the Middlesex Hospital, as being the institution where clinical and pathological researches on the disease are most closely combined.

PROF. A. G. RUTHVEN, curator of the museum of the University of Michigan, is in charge of an expedition that will sail from New York on June 15 for Colombia, South America. The expedition will make its headquarters near Santa Marta, and will study the fauna from the sea-level to the mountain summits. The party will also include Prof. A. S. Pearse, of Wisconsin, and Mr. F. Gaige.

THE autumn meeting of the Iron and Steel Institute will be held in Brussels, from Monday to Thursday, September 1–4. The opening meeting will be held in the hall of the Palais des Académies on Monday, September 1, when a selection of papers will be read and discussed. In the evening a reception will be held by the burgomaster at the Hotel de Ville. It is hoped that his Majesty King Albert will receive the members at the Royal Palace, Brussels, on September 2.

Three Chadwick public lectures, on nature and nurture in mental development, will be given by Dr. F. W. Mott, F.R.S., at the Royal Society of Arts, on Fridays, June 6, 13, and 20. Admission to the lectures is free. Information concerning future Chadwick lectures may be obtained of the secretary, Mrs. Aubrey Richardson, at the offices of the Trust, 8 Dartmouth Street, Westminster.

In February last the Italian Colonial Office appointed a commission to undertake the scientific study of the country of Tripoli. Prof. F. Eredia, of Rome, informs us that the commission has now travelled through the area, and has collected valuable geological, agricultural, botanical, and meteorological data. Meteorological stations have been established by Prof. Eredia in appropriate situations. Temperature and rainfall observations are to be sent from these stations to the Ufficio Centrale di Meteorologia in Rome, and will be published monthly, with the observations received regularly already from the Tripoli Meteorological Observatory.

We are asked to state that the British Fire Prevention Committee, having established a technical library that will be known as the International Fire Library, with a nucleus of more than 2000 books dealing specifically with matters of fire prevention, fire service, and fire loss, is now desirous of directing the attention of authors, public authorities, publishers, and collectors to the fact that a new catalogue is in preparation, and that any books, pamphlets, or reports which they are able to spare for this collection should be addressed as soon as possible to the honorary chief librarian, The International Fire Library, 8 Waterloo Place, Pall Mall, S.W.

The death is announced of Prof. Ernst Kittl, director of the geological and palæontological section of the Imperial Museum of Natural History, Vienna. Born in 1854, Prof. Kittl became custos of the Vienna Museum in 1893, and subsequently succeeded Prof. T. Fuchs as head of his department. He was the author of numerous papers and memoirs on fossils, chiefly Mollusca, and he prepared a valuable guide-book to the geology of the Salzkammergut for the meeting of the International Geological Congress at Vienna in 1903. For many years he was an active member of the Austrian Tourist Club, and from 1889 to 1898 he edited the publications of its natural history section.

The death is announced of Dr. Léon Pervinquière, lecturer on palæontology in the University of Paris. After a brilliant career as student in the University, he spent three years in investigating the geology of central Tunis, and on his return published an exhaustive volume on the region, with the best geological map of Tunis which has hitherto been prepared. At the same time he made a great collection of Tunisian fossils, which he afterwards studied in Paris, and the results of his researches were published in two handsome volumes on the Jurassic and Cretaceous Mollusca. Two years ago Pervinquière accompanied a boundary commission to examine the geology of the frontier between Tunis and Tripoli, and made valuable contributions to our knowledge of the extreme southern part of these countries. His untimely death at the age of forty is a serious loss to geological science.

The death is reported, in his fifty-sixth year, of Prof. W. Hallock, for the last eleven years professor of physics at Columbia University, New York. He graduated at that University in 1879, and then studied at Würzburg, where he was for a short time an assistant in the physical laboratory. Returning to America in 1882, he was successively a physicist on the U.S. Geological Survey, professor of physics at the Corcoran Scientific School, Washington, professor of chemistry at the National College of Pharmacy, and assistant in charge of the Astrophysical Observatory of the Smithsonian Institution. For ten years before his appointment to the full professorship he was associate professor of physics at Columbia. While on the staff of the Geological Survey he conducted the investigation of the subterranean temperatures in the dry well at Wheeling, where the drill went down to 4500 ft. below the surface of the earth. For three years Prof. Hallock was at work in the Yellowstone Cañon, investigating the phenomena of the hot springs and geysers there. Among other subjects that attracted his attention were the effects of pressure on powdered materials, and the thermal expansion of rocks.

An account has reached this country of the experiences of Mr. Frank Wild and his companions in the Antarctic. Mr. Wild led the second party of Dr. Mawson's Australasian Expedition. This party was dispatched by the leader to Sabrina Land or Knox Land; the existence of the former was disproved, while the latter was found to be unapproachable. The party, however, "landed" on a glacier in motion, and established a depôt on the land behind it. Thence the party divided, carrying out surveys east and west; the eastern section carried its work as far as 101° E., and explored inland for fifty miles, to an altitude of 4500 ft., while the western section worked along the coast to effect a junction with the surveys of the German expedition of 1902. Its route also lay at high altitudes. The discovery of the largest known rookery of emperor penguins is recorded. Severe weather conditions were encountered, and it is stated that the same blizzard which proved fatal to Scott held Wild's party prisoners for nine days. The new land was taken possession of in the name of Queen Mary's Land; it is a continuation of the King Edward VII. plateau, and has an upward slope towards the pole, and a coast-line of 350 miles.

A very interesting circular has just been issued by the Department of Mines of Canada, directing attention to the fact that an experimental laboratory for the concentration and treatment of Canadian minerals has been installed by the Department at Ottawa. The laboratory includes both small-scale laboratory apparatus and plant of working size, though, of course, not unduly large, for the practical treatment of bulk samples. The plant is to be operated free of all charges upon Canadian ores, the minimum amount for a laboratory test being 200 lb. of mineral, and for a working test not less than 5 tons. It is true that something of the same kind has been done previously in Australasia, but never upon the same liberal scale, and the intelligent enterprise of the Canadian Government in thus facilitating the development of mining and metallurgical industries in the Dominion cannot be too highly appreciated. It is sincerely to be hoped that the example may be followed elsewhere.

The summer meeting of the Institution of Naval Architects is to be held in Glasgow on June 23–27. The premises of the Institution of Engineers and Shipbuilders in Scotland have been placed at the disposal of the visitors to Glasgow. Among the papers included in the programme of proceedings may be mentioned:—Dr. S. J. P. Thearle, note on some cases of fatigue in the steel material of steamers; Messrs. G. S. Baker and J. L. Kent, effect of form and size on the resistance of ships; Prof. A. H. Gibson and J. Hannay Thompson, experiments on "suction" or interaction between passing vessels; Mr. A. Cannon, experimental determination of the effect of internal loose water upon the rolling of a ship amongst a regular series of waves; Mr. Lloyd Woollard, effect of water chambers on the rolling of ships; Prof. L. Gümbel, on the criterion for the occurrence of cavitation. The programme also includes a variety of functions, visits to works, and excursions, in addition to the more serious business of the meeting.

Mr. A. Radclyffe Dugmore, the pioneer photographer of big game in their native haunts, and the author of "Camera Adventures in the African Wilds" and other works on kindred subjects, delivered, at the Æolian Hall on May 30, the first of two lectures entitled "Stalking Big Game with a Camera." This lecture dealt solely with his experiences in British East Africa, where he succeeded in getting some splendid flashlight photographs of lions creeping up to a "kill" at night, and of hartebeests drinking at a water-hole. He was very fortunate also in securing pictures of rhinoceroses, giraffes, zebras, gazelles, and buffaloes in the open, two of them, showing a large black rhinoceros in the act of charging the photographer, being particularly impressive. So close was the beast at the final click of the shutter that he had to be turned with a rifle bullet; but to Mr. Dugmore's credit be it said that he claims never to have used firearms unless his own life was in danger or unless meat was required for feeding the members of the expedition. Many of the photographs show beautiful spots in the scenery of East Africa, one with a group of Grant's gazelles in the foreground and the snow-clad summit of Kilimanjaro breaking through the clouds in the distance being especially charming. Mr. Dugmore is a clever and practised lecturer, and those who are interested in living animals could not spend a pleasanter hour and a half than by visiting the Æolian Hall this evening, June 5, when the second of the two lectures will be given.

Mr. R. E. Dennett, Deputy Conservator of Forests, Nigeria, a well-known authority on the negroes of West Africa, has reprinted from the Journal of the African Society a paper entitled "A Common Basis of Religion." In our existing knowledge of Bantu culture, derived from writers like Miss Mary Kingsley and Sir A. Ellis, it is startling to find the negro credited with a system of philosophy, including no fewer than 201 parts, each representing an Orisha, or departed spirit. It is said to be based on on elaborate scheme of symbolism, and the order of these symbols represents "to the psychologist what the periodic classification is to the chemist, or perhaps another form of Newland's law of octaves." The exposition, as it stands, is most ingenious, and the writer concludes by stating that by "superimposing the kinetic parts upon the potential in the moral and intellectual categories we note that the soul becomes the home of faith, the mind of idealism, the body of the senses, the will of life." At the same time, it must be remembered that the interpretation largely rests on the verbal analysis of native terms, and it may possibly be held that while our knowledge of Bantu philology scarcely warrants the conclusions, Mr. Dennett may have read between the lines of his authorities more than they may be reasonably admitted to bear.

A recent number of the Annals of Tropical Medicine and Parasitology (vol. vii., No. 1) contains a detailed study, by Major Christophers, I.M.S., upon the colour-markings and other variable characters of Anophelinæ, with special reference to the systematic and phylogenetic grouping of the species. The publication of this memoir in a medical journal may cause it to be overlooked by naturalists, to whom it should be of special interest. The author concludes that colour-markings can be utilised, equally with structural characters, in a natural classification of the anophelines and for placing species in groups to which they have affinities. A classification based on colour-marking approximates very closely to one based on scale-structure, but shows the affinities and relation between the groups much more clearly. The tendency of the phylogenetic evolution of the group is towards elaboration of ornament and development of scales; the more scaly an anopheline, the more advanced phylogenetically it would appear to be. Three main subdivisions are recognised; the Protoanopheles, occuring both in the Old and New Worlds; the Deuteranopheles, chiefly African, South Asian, and Malayan; and the Neoanopheles, a peculiar Australasian type.

The report of the Philadelphia Zoological Society for 1912–13 records a large increase in receipts over the previous year, this increase being distributed over every month of the year.

The *Naturwissenschaftliche Wochenschrift* of May 11 (No. 19, Bd. xii.) contains an excellent summary, with bibliography, by Dr. Oberstein, of the fungoid diseases of animals and the bacterial diseases of plants.

We have to acknowledge the receipt of a copy of the third part of vol. i. of the *Sarawak Museum Journal,* the contents of which include an article by Mr. C. Aurivillius on Bornean longicorn beetles, and a second, by Mr. C. J. Gahan, on those remarkable Indo-Malay coleopterous larvæ commonly termed "trilobites," the adult condition of which is still unknown. Mr. Gahan suggests that the larval stage may be permanently retained in the females.

EXTINCT North American horses, all referable to the modern genus, form the subject of a paper by Mr. O. P. Hay, published as No. 1969 (vol. xliv., pp. 569–594) of the Proceedings of the U.S. National Museum. Four species are described as new, two of these being based on teeth alone, while each of the other two is represented by the skull. No. 1975 (vol. xliv., pp. 649–654) of the same serial is devoted to the description of a remarkably fine skeleton of a zeuglodont lately set up in the museum. For these primitive whales Mr. J. W. Gidley, the author of the article, revives the extremely inappropriate name Basilosaurus, despite the fact that it was replaced by its sponsor, Sir R. Owen, by Zeuglodon when the mammalian nature of the remains became evident.

WE have received reprints of two papers by Mr. W. E. Collinge on the relation of wild birds to forestry and on the destruction and dispersal of weed seeds by wild birds. In the former it is pointed out that but few wild birds are directly hurtful to forests in this country, the majority of species found in or near forests being distinctly beneficial owing to their destruction of insects and small mammals. Attention is directed to the importance of providing nesting-boxes in forests for the insectivorous birds. Merely to protect these birds is not sufficient; their multiplication must also be looked after. In the second paper many interesting details are given as to the frequency with which birds completely destroy even hard fruits and seeds, but there are so many cases in which the seeds pass through the bird's alimentary canal without being injured that the author cannot regard the seed-eating birds as a class as being beneficial—on the whole, they appear to act as distributors of weed seeds to a much larger extent than is generally supposed.

AT the commencement of a very interesting article on our present knowledge of the earliest quadrupedal vertebrates (Tetrapoda), Prof. F. Broili points out that the occurrence of remains of land plants in the Lower Silurian of North America and the Upper Silurian of Kellerwald and the Hartz, coupled with their occasional presence in the Lower Devonian, may be taken as strong presumptive evidence of the existence of a contemporary vertebrate land-fauna. The first actual evidence of such an early fauna does not occur, however, until the Upper Devonian, and then only in the shape of the remarkable footprint from Warren County, Pennsylvania, to which O. C. Marsh gave the name Thinopus. Very noteworthy is the fact that this print represents a relatively large animal, vastly superior in point of size to the tiny salamanders of the succeeding Lower Carboniferous epoch, although equalled in this respect by Eosaurus of the Upper Carboniferous of Nova Scotia. Its evidence appears, however, quite indisputable, and we must therefore assume the Tetrapoda to have attained a relatively high degree of development in the Devonian, and thus to have been well represented in the Silurian. This being so, the Carboniferous and Permo-Triassic forms, interesting and in many respects generalised as they are, cannot be regarded as the earliest types, and, consequently, any attempts to formulate the phylogeny of the group must be to a great extent premature. The author has much to say regarding the structure and affinities of labyrinthodonts and anomodonts, but space permits only of the remark that he regards most of these, not even excluding dicynodonts, as amphibious.

WE have received three numbers of the *Bollettino* of the Italian Seismological Society, forming a volume of more than 300 pages, and containing notices of the earthquakes recorded in Italy during the first half of the year 1909. The total number of entries is 726, all but seventy of which refer to shocks that originated within the area of Italy. This number, which is much greater than usual, is partly due to the frequency of the after-shocks of the Messina earthquake of December 28, 1908. Dr. Martinelli, the editor of the volume, connects 152 shocks with this great earthquake, but many shocks recorded at Messina and other isolated places, if more fully known, might have to be placed in the same category.

THE Commonwealth Meteorologist has recently issued sheet maps showing the mean temperature and mean rainfall of Australia for the separate months and for the year. These maps confirm in the main those published in the "Atlas of Meteorology," so far as regards the south-eastern portion of the larger island; they extend the information over the remainder of the continent, and thus include Tasmania. The earlier maps, based on the *Challenger* results, show temperatures for six alternate months only. The most striking points of difference occur in the annual maps. The annual isotherms in the atlas map sweep southwards between the coasts; the new maps show roughly a sweep to the north. The annual isohyets on the new maps show much greater detail for the north and east coasts, and indicate that parts of the north coast receive more than 60 in. and Geraldton district on the Queensland coast more than 140 in. annually. The new monthly rainfall maps indicate clearly the winter rains in the south and the summer rains in the north.

ACCORDING to the *résumé* of the communications made to the French Physical Society at the meeting on April 18, a large proportion of the evening was devoted to a discussion of the results of recent determinations of the radiation constants, σ of Stefan's law and c of Wien's and Planck's laws. One of the most recent and most accurate determinations of c is that of Warburg, Leithäuser, Hupka, and Müller, made at the Reichsanstalt, and reported in the April number of the *Annalen der Physik*. According to this determination c has the value 1·437 centimetre-degrees, a number which differs little from the mean of the more modern of the previous determinations. The determinations of σ differ much more seriously from each other. The oldest values lie between 5·0 and 5·5, while almost all the newer values are above 5·5, those of Valentiner and Westphal being 5·58 and 5·54 respectively, while M. Féry has in three sets of experiments obtained values above

6·0. M. Bauer attributes these high values to erroneous determinations of the corrections to be applied to the observations for the reflecting power of lamp black. He gives as the most probable value of σ deduced from his own and other observations $(5{\cdot}60 \pm 0{\cdot}04) \times 10^{-12}$ watt/(degree)^4.

An interesting account of the survey of the Alaskan boundary, by Mr. J. A. Flemer, appears in *The Engineering Magazine* for May. The northern section of this line follows the 141st meridian. The initial point, determined by telegraphic longitude, is at the crossing of this meridian and the Yukon River. The azimuth of the meridian at this station was determined astronomically, and the line itself is being projected both north and south by two observers, one an American and the other a Canadian. The international projection party is being followed by a triangulation party. The topographical work is being executed by the plane-table method, since the climatic conditions in this part of Alaska have not that extreme character inherent to south-east Alaska, where the photo-topographic surveying method had to be employed. The triangulation party which precedes the topographic party furnishes the latter with the needed geodetic control, based on the field computations. The plane-table sheets are on 1 : 45,000 scale, with a horizontal contour interval of 100 ft., and the topographic details are mapped with the 141st meridian as the median line of a strip four miles wide. The boundary is being marked with aluminium-bronze monuments, the monument-setting party cutting a vista through wooded areas 10 ft. on each side of the meridian.

The Academy of Natural Sciences of Philadelphia commemorated its centenary in March, 1912, by a number of conferences, of which an account was published in the issue of Nature for April 11, 1912 (vol. lxxxix., p. 143). On that occasion the academy decided to publish several volumes in commemoration of the centenary, and one of these —an index to the entire series of its Journal and Proceedings, from the first volume issued in 1817 to the close of 1910—recently made its appearance. The index forms a volume of 1433 pages, and consists of a catalogue of the contributions under the names of authors, and a reference to all species, genera, families, &c., described or mentioned in the several volumes, arranged alphabetically. The expense incurred in the preparation and publication of the work has compelled the publication committee to make a charge for it. The price, 3.50 dollars, carriage paid, is less than the cost of production. Copies may be obtained from the editor, Dr. E. J. Nolan, Academy of Natural Sciences, Logan Square, Philadelphia, Pa., U.S.A.

A classified catalogue of second-hand books, journals, and monographs on zoology and other branches of natural science, including works from the library of the late Mr. Robert Shelford, sometime curator of the museum, Sarawak, and afterwards assistant in the Hope Museum of Zoology, Oxford, has been issued by Messrs. Bowes and Bowes, Cambridge, who have the works on sale. Mr. F. Edwards, Marylebone, London, W., has just issued a catalogue of books on ornithology and oology, including copies of the works of John Gould, H. E. Dresser, Lord Lilford, Henry Seebohm, &c.; also a series of native original drawings, in colours, of birds of India and Malaysia.

We have received the first number of a new periodical, *La Science et la Vie* (April, 1913), the object of which is to popularise science. The principal contributions are:—Time measurements and signals, by M. G. Bigourdan; the construction and life of a big gun, by Lieut.-Col. Picard; the little agents of death (dealing with insect carriers of disease), by M. J. Paul Dupuy; and "Can the onset of old age be retarded?" by Dr. Toulouse. The periodical is profusely illustrated, and is issued at the price of one franc the number. The list of collaborators includes the names of many well-known men of science.

OUR ASTRONOMICAL COLUMN.

Periodic Spectrum of 12 Canes Venatici.—A Kiel telegram, dated May 30, states that Belopolsky has found that the star 12 Canes Venatici exhibits a spectrum that is periodic. Lines appeared on the following dates, April 22, 27·8, May 4, 9, and 22·5, but on seventeen days they have been invisible.

Position of the Axis of Mars.—Prof. Percival Lowell publishes, in the Bulletin No. 56 of the Lowell Observatory, his observations and those of Mr. Slipher of the position of the polar cap of Mars for the determination of the axis of this planet. The observations were made towards the end of the year 1911, but they include others made by Mr. Slipher in 1909. The values of the position of the axis are given in the case of each observer for every alternate year from 1901 to 1909. As regards the results and their accuracy, it is stated at the end of the paper that the mean of all Prof. Lowell's measures for the last fourteen years gives for the tilt of the Martian equator to the Martian ecliptic the value 23·5°, while that obtained by Mr. Slipher for 1909 and 1911 gives precisely the same value. In this publication Prof. Lowell refers to Prof. H. Struve's communication to the Berlin Academy, in which it is stated that the motion of the satellites affords a better determination of the Martian axis than direct measurement of the polar caps. This view is not acceptable to Prof. Lowell, who says, "it seems advisable to here correct a few misapprehensions," and these are contained in the present bulletin.

The Solar Eclipse of April 16–17, 1912.—A communication by M. Simonin to the *Comptes rendus* for April 28 contains the results of the discussion of observations made during the eclipse of the sun on April 16–17 of last year. It will be remembered that the central line extended from Portugal to Russia, and along that line, scattered at various points, a great number of observers noted the times of interior and exterior contacts. In fact, a large amount of material was available for discussion, and this has now been completed. The conclusions may be summed up as follows:—

The right ascension and declination of the moon's centre, published for April 17, 1912, by the *Connaissance des Temps*, and corrected after Newcomb, ought to be increased respectively by 0·63s. and 4·3″. The calculated values of the semi-diameters of the sun and moon at the earth's mean distance give the figures 15′ 59·96″ and 15′ 32·16″. The sun's semi-diameter